LEANNE M. GILBERTSON

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EDUCATION

YALE UNIVERSITY, New Haven, CT — 2009 – 2014
Department of Chemical and Environmental Engineering
Doctor of Philosophy, May 2014
Master of Philosophy, May 2012
Master of Science, May 2012

HAMILTON COLLEGE, Clinton, NY — 2003 – 2007
Department of Chemistry
Bachelor of Arts, Magna Cum Laude, Chemistry & Education

PROFESSIONAL POSITIONS HELD

Assistant Professor, Civil and Environmental Engineering, University of Pittsburgh — 2015 – Present
Secondary Appointment, Chemical and Petroleum Engineering

Postdoctoral Associate, Chemical and Environmental Engineering, — 2014 – 2015
Center for Green Chemistry and Green Engineering, Yale University

High School Chemistry and AP Chemistry Teacher, St. James School, MD — 2009

Teaching Fellow, George Watson's College, Edinburgh Scotland — 2007 – 2008

PUBLICATIONS

Refereed Publications

Underline indicates student advisee author | *Corresponding author | ⊥Shared first authorship

26. Pourzahedi, L.; Laughton, S.; Gao, X; Zimmerman, J. B.; Theis, T. L.; Westerhoff, P.; **Gilbertson, L. M.***; Lowry, G. V. *Defining the Design Space: Advancing Sustainable Crop Production Using Nanotechnolgy*. *Submitted*
25. Lowry, G. V.; Avellan, A.; **Gilbertson, L. M.** *Opportunities and Challenges for Nanotechnology in the Agri-Tech Revolution*. Submitted to Nature Nanotechnology.
24. Lankone, R. S.; Challis, K.; Pourzahedi, L.; Durkin, D. P.; Bi, Y; Wang, Y; Garland, M; Brown, F; Hristovski, K; Tanguay, R.; Westerhoff, P.; Lowry, G.; **Gilbertson, L. M.**; Ranville, J. D.; Fairbrother, H. "Copper release and transformation following natural weathering of nano-enabled pressure-treated lumber." *Science of the Total Environment*, 2019, Just Accepted.
23. Wang, Y.; Tavakoli, S.; Vidic, R.; Khanna, V.; **Gilbertson, L. M.*** "Life Cycle Assessment of a Produced Water and Abandoned Mine Drainage Co-Treatment Process to Advance Water Quality Management in Pennsylvania" *Environmental Science and Technology,* 2018, 52(23), 13995-14005.
22. Smith, A. and **Gilbertson, L. M.*** "Rational Ligand Design to Improve Agrochemical Delivery Efficiency and Advance Agriculture Sustainability." *ACS Sustainable Chemistry and Engineering,* 2018, 6 (11), 13599-13610.
21. Stabryla, L.; Johnston, K.; Millstone, J. E.; **Gilbertson, L. M.*** It's Not All About the Ion!: Support

for Particle-Specific Contributions to AgNP Antimicrobial Activity. *Environmental Science: Nano*, 2018, 5, 2047-2068. *Cover Feature*

20. Pourzahedi, L.; Pandorf, M.; Ravikumar, D., Zimmerman, J. B.; Seager, T. P.; Theis, T. L.; Westerhoff, P.; **Gilbertson, L. M.***, Lowry, G. V. "Life cycle considerations of nano-enabled agrochemicals: Are today's tools up to the task?" *Environmental Science: Nano*, 2018, 5, 1057-1069. *Cover Feature*
19. Falinski, M. M.; Plata, D. L.; Chopra, S. S.; Theis, T. L.; **Gilbertson, L. M.**; Zimmerman, J. B. "Navigating nanomaterial space for performance, hazard, and cost: Approaching more responsible nanomaterial selection and design." *Nature Nanotechnology*, 2018, 13, 708-714.
18. Urso, J. H. and **Gilbertson, L. M.*** "Atom Conversion Efficiency: A New Sustainability Metric Applied to Nitrogen and Phosphorus Use in Agriculture." *ACS Sustainable Chemistry and Engineering.* 2018, 6(4), 4453-4463. *Cover Feature*
17. Johnston, K. A.; Stabryla, L. M.; Smith, A. M.; Gan, X. Y.; **Gilbertson, L. M.***; Millstone, J. E.* "Impacts of Broth Chemistry on Silver Ion Release, Surface Chemistry Composition, and Bacterial Cytotoxicity of Silver Nanoparticles" *Environmental Science: Nano*, 2018, 5, 304-312.
16. Yin, J.; Wang, Y.; **Gilbertson, L. M.*** "Opportunities to Advance Sustainable Design of Nano-Enabled Agriculture Identified Through a Literature Review." *Environmental Science: Nano*, 2018, 5, 11-26.
15. Lankone, R. S.; Challis, K.; Bi, Y.; Hanigan, D.; Reed, R. B.; Zaikova, T.; Hutchison, J. E.; Westerhoff, P.; Ranville, J.; Fairbrother, H.; **Gilbertson, L. M.*** "Methodology for Quantifying Engineered Nanomaterial Release from Diverse Matrices in Outdoor Weathering Conditions to Inform Life Cycle Assessment." *Environmental Science: Nano,* 2017, 4, 1784-1797. *Cover Feature*
14. Gallagher, M. J.; Allen, C; Buchman, J. T.; Qiu, T. A.; Clement, P. L.; Krause, M. O. P.; **Gilbertson, L. M.* "**Research highlights: Applications of life-cycle assessment as a tool for characterizing environmental impacts of engineered nanomaterials." *Environmental Science: Nano,* 2017, 4(2), 276-281.
13. Wang, Y.; **Gilbertson, L. M.*** "Informing Rational Design of Graphene Oxide through Surface Chemistry Manipulations: Properties Governing Electrochemical and Biological Activities." *Green Chemistry,* 2017, 19, 2826-2838. *Special Issue: 2017 Emerging Investigators*
12. **Gilbertson, L. M.*** and Ng, C. A.* "Evaluating the Use of Alternatives Assessment to Compare Nanomaterial and Bulk Chemical Alternatives to Brominated Flame Retardants." *ACS Sustainable Chemistry and Engineering*, 2016, 4(11), 6019-6030.
11. **Gilbertson, L. M.***; Albalghiti, E. M.; Fishman, Z.; Perreault, F.; Corredor, C.; Posner, J. D.; Elimelech, M.; Pfefferle, L. D.; Zimmerman, J. B. "Shape-Dependent Properties of Nano-Cupric Oxide: Surface Reactivity and Antimicrobial Activity." *Environmental Science and Technology,* 2016, 50(7), 3975-3984.
10. **Gilbertson, L. M.**; Melnikov, F.; Wehmas, L.; Anastas, P. T.; Tanguay R.; Zimmerman, J. B. "Toward Safer Multi-Walled Carbon Nanotube Design: Establishing a Statistical Model that Relates Surface Charge and Embryonic Zebrafish Mortality." *Nanotoxicology,* 2016, 10(1), 10-19.
9. **Gilbertson, L. M.*;** Wender, B. A.; Zimmerman, J. B.; Eckelman, M. J. "Coordinating Modeling and Experimental Research of Engineered Nanomaterials to Improve Life Cycle Assessment Studies." *Invited Submission to Environmental Science: Nano,* 2015, 2, 669-682.
8. Hicks, A.; **Gilbertson, L. M.**$^{\perp}$; Jamila S. Yamani; Zimmerman, J. B.; Theis, T. "Life Cycle Payback Estimates of Nano-Silver Enabled Textiles Under Different Silver Loading, Release, and Laundering Scenarios Informed by Literature Review." *Environmental Science and Technology,* 2015, 49(13),

7529-7542.

7. Azoz, S.; **Gilbertson, L. M.**; Hashmi, S. M.; Han, P.; Stervinsky, G. E.; Kanaan, S. A.; Zimmerman, J. B.; Pfefferle, L. D. "Enhanced Dispersion and Electronic Performance of Single-Walled Carbon Nanotube Thin Films without Surfactant: A Comprehensive Study of Various Treatment Processes." *Carbon,* 2015, 93, 1008-1020.
6. **Gilbertson, L. M.**; Zimmerman. J. B.; Plata, D. L.; Hutchison, J. E.; Anastas, P. T. "Designing Nanomaterials to Maximize Performance and Minimize Implications Guided by the Principles of Green Chemistry." *Chemical Society Review,* 2015, 44, 5758-5777. *Cover Feature*
5. Azoz, S.; Exarhos, A. L.; Marquez, A.; **Gilbertson, L. M.**; Nejati, S.; Cha, J. J.; Zimmerman, J. B.; Kikkawa, J. M.; Pfefferle, L. D. "Highly Conductive Single-Walled Carbon Nanotube Thin Films Preparation by Direct Alignment on Substrates from Water Dispersions." *Langmuir,* 2015, 31(3), 1155-1163.
4. **Gilbertson, L. M.**; Busnaina, A. A.; Isaacs, J.; Zimmerman, J. B.; Eckelman, M. J. "Life Cycle Impacts and Benefits of a Carbon Nanotube-Enabled Chemical Gas Sensor." *Environmental Science and Technology*, 2014, 48(19), 11360-11368.
3. **Gilbertson, L. M.**; Goodwin, D. G.; Taylor, A. D.; Pfefferle, L. D.; Zimmerman, J. B. "Towards Tailored Functional Design of Multi-Walled Carbon Nanotubes (MWNTs): Electrochemical and Antimicrobial Activity Enhancement via Oxidation and Selective Reduction." *Environmental Science and Technology*, 2014, 48(10), 5938-5945.
2. **Pasquini, [Gilbertson] L. M.**; Sekol, R. C.; Taylor, A. D.; Pfefferle, L. D.; Zimmerman, J. B. "Realizing Comparable Oxidative and Cytotoxic Potential of Single- and Multiwalled Carbon Nanotubes through Annealing." *Environmental Science and Technology*, 2013, 47(15), 8775-8783.
1. **Pasquini, [Gilbertson] L. M.**; Hashmi, S. M.; Sommer, T. J.; Elimelech, M.; Zimmerman, J. B. "Impact of Surface Functionalization on Bacterial Cytotoxicity of Single-Walled Carbon Nanotubes." *Environmental Science and Technology*, 2012, 46(11), 6297-6305.

Non-Refereed Publications

Conference Proceedings

1. Clark, R.; Stabryla, L. M.; **Gilbertson, L. M.** "Use of Active Learning and the Design Thinking Process to Drive Creative Sustainable Design Solutions." 2018 ASEE Annual Conference and Exposition, Salt Lake City, UT. https://peer.asee.org/31186

Patents

1. Gilbertson, L. M. *Liquid Nutrient Delivery Platform*, Provisional Patent, Application No. 62500256

Invited Presentations

16. American Chemical Society Fall 2019 Meeting, Invited Speaker in the session: Showcasing Emerging Investigators & Future Perspectives: A Symposium by the RSC Environmental Science Journals, San Diego, CA, August 25-29, 2019.
15. American Chemical Society Colloids and Surface Sciences Symposium, keynote speaker in the session: Environmental Systems and Sustainability Session, Atlanta Georgia, June 16-19, 2019.
14. Environmental Nanotechnology Gordon Research Conference, Speaker in the Sustainable Nano: Green Design and Life Cycle Assessment Session, Newry, ME, June 2-7, 2019.
13. Tennessee Tech University, Department of Chemical Engineering, April 23, 2019.
12. American Chemical Society Spring 2019 Meeting, Invited Speaker for the Nanotechnology at the Water-Agriculture-Energy Nexus, Orlando, Fl, March 31-April 4, 2019.

11. Pittsburgh Water Collaboratory, Faculty Lunch Series, February 4, 2019.
10. Quantifying Exposure to Engineered Nanomaterials (QEEN) from Manufactured Products Workshop II, Speaker in the Exposure to Nanomaterials in Agroecosystems and Agriculture Production Session, U.S. Department of Labor, Washington DC, October 9-10, 2018.
9. Nanoscale Science and Engineering for Agriculture and Food Systems Gordon Research Conference, Speaker in the Emerging Investigator Session, South Hadley, MA, June 3-8, 2018.
8. University of Buffalo, Department of Civil and Environmental Engineering, December 8, 2017.
7. Northwestern University, Department of Civil and Environmental Engineering, October 27, 2017.
6. Carnegie Mellon University, Department of Civil and Environmental Engineering, March 24, 2017.
5. Arizona State University, School of Sustainable Engineering and the Built Environment, February 21, 2016.
4. St. Francis University, Environmental Engineering Department, December 2, 2016.
3. Indiana University of Pennsylvania, Chemistry Department Seminar, October 31, 2016.
2. University of Pittsburgh Science 2016, Late-Breaking Technologies and Methods session, October 20, 2016.
1. Hamilton College, Chemistry Department Seminar, April 8, 2016.

Conference Presentations

30 since at University of Pittsburgh (20 student presentations, 2 received award recognition)

48. *A Systems Approach to Design of Nano-Enabled Solutions to Improve Nutrient Use Efficiency.* Sustainable Nanotechnology Organization Conference, Washington, DC. November 8-10, 2018.
47. *Designing with the System in Mind: Life Cycle Assessment of Nano-Enabled Agrochemicals.* 2018 AIChE Annual Meeting, Pittsburgh, PA. Oct 28-Nov 2, 2018.
46. *Unraveling the role of nitrogen in the biological activity of nitrogen-doped graphene.* 2018 AIChE Annual Meeting, Pittsburgh, PA. Oct 28-Nov 2, 2018. (Student Oral Presentation, Yan Wang)
45. *Life cycle assessment of co-treatment process of produced water and abandoned mine drainage.* PA-AWWA SW Districts and Western Section WWOAP Joint Meeting, Pittsburgh, PA. Oct 19, 2018. (Student Oral Presentation, Yan Wang)
44. *Quantifying nanomaterial release of nanocomposites following natural weathering.* 2nd Quantifying Exposure to Engineered Nanomaterials from Manufactured Products Workshop, Washington, DC. October 9-10. (Poster)
43. *Teaching sustainable engineering using a design thinking approach.* The Association for the Advancement of Sustainability in Higher Education (AASHE) Conference & Expo, Pittsburgh, PA, Oct 2-5, 2018. (Oral Presentation, Leanne Gilbertson and Lisa Stabryla)
42. *Use of active learning and the design thinking process to drive creative sustainable design solutions and promote inclusive classroom environments*. The Association for the Advancement of Sustainability in Higher Education (AASHE) Conference & Expo, Pittsburgh, PA, Oct 2-5, 2018. (Student Poster, Lisa Stabryla)
41. *Revealing causative mechanisms of electrochemical and biological activities of graphene via heteroatom functionalization*. 256th ACS National Meeting, Boston, MA. Aug 19-23, 2018 (Student Oral Presentation, Yan Wang)
40. *Leveraging nanomaterial design for next generation antimicrobials*. Microbial Stress Response Gordon Research Seminar (GRS) and Conference (GRC), South Hadley, MA, July 14-20, 2018. (Student Poster, Lisa Stabryla)

39. *Atom Conversion Efficiency (ACE): Assessing Fertilizer Use Efficiency From Synthesis to Farm Gate*. 2018 Nanoscale Science and Engineering for Agriculture and Food Systems (GRS and GRC), South Hadley, MA, June 3−8, 2018 (Student Poster, Josh Urso)
38. *Leveraging nanomaterial design for next generation antimicrobials*. Graduate Student Research Day (GSRD), University of Pittsburgh, Pittsburgh, PA, April 6, 2018. (Student Oral Presentation, Lisa Stabryla)
37. *Use of Active Learning and the Design Thinking Process to Drive Creative Sustainable Design Solutions.* Assessment and Teaching Conference, Pittsburgh, PA, January 26, 2018. (Student Poster, Lisa Stabryla)
36. *Sustainable design of carbon nanomaterials: decoupling the role of material structure and surface chemistry on electrochemical and biological activities.* 9th Annual Sustainable Conference hosted by ASCE, Pittsburgh, PA. Nov 16, 2017. (Student Poster, Yan Wang) * Third Prize Best Poster Award in Student Poster Competition
35. *Informing rational design of graphene oxide through surface chemistry manipulations: properties governing electrochemical and biological activities* American Carbon Society Graphene Workshop, Cleveland, Ohio Nov 14−15, 2017. (Student Oral Presentation, Yan Wang).
34. *Sustainable design of carbon nanomaterials: decoupling the role of material structure and surface chemistry on electrochemical and biological activities* AIChE Annual Meeting, Minneapolis, MN Oct 29−Nov 2, 2017. (Student Oral Presentation, Yan Wang) *Second Runner-up Prize of the Carbon Nanomaterials Graduate Student Award
33. *Coupling Material and Biological Systems to Inform Design of Nano-enabled Antimicrobials*. 27th Annual Society of Environmental Journalists (SEJ) Conference, Pittsburgh, PA, Oct 4-8, 2017. (Student Poster, Lisa Stabryla)
32. *Design for Sustainable (nano)Materials.* Poster at the AEESP Research and Education Conference, University of Michigan, June 20–22, 2017.
31. *Leveraging Nanomaterial Design for Next Generation Antimicrobials*. Environmental Nanotechnology Gordon Research Conference (GRC), Stowe, Vermont, June 18-23, 2017 (Student Poster, Lisa Stabryla).
30. *Leveraging Nanomaterial Design for Next Generation Antimicrobials*. 21st Annual ACS Green Chemistry & Engineering Conference, Reston, Virginia, June 13-15, 2017. (Student Poster, Lisa Stabryla)
29. *Leveraging Nanotechnology to Advance Agriculture Sustainability: Life Cycle Considerations and Recommendations.* Presentation at the Engineering Sustainability Conference, Pittsburgh, PA, April 10–11, 2017.
28. *Sustainable Design of Carbon Nanomaterials: Decoupling the Role of Material Structure and Surface Chemistry on Electrochemical and Biological Activities.* Engineering Sustainability Conference, Pittsburgh, PA, April 10–11, 2017. (Student Poster, Yan Wang)
27. *Systems-Level Evaluation of Nano-Enabled Applications for Agriculture and Food Systems: Opportunities to Inform Sustainable Design.* Engineering Sustainability Conference, Pittsburgh, PA, April 10-11, 2017. (Student Poster, Joy Yin)
26. *Coupling Material and Biological Systems to Inform Design of Nano-enabled Antimicrobials.* Engineering Sustainability Conference, Pittsburgh, PA, April 10-11, 2017. (Student Poster, Lisa Stabryla)
25. *Informing Rational Design of Graphene Oxide through Surface Chemistry Manipulations: Properties Governing Electrochemical and Biological Activities.* Graduate Student Research Day, Department of

Civil and Environmental Engineering, University of Pittsburgh, April 7th, 2017. (Student Oral Presentation, Yan Wang)

24. *Can We Engineer a Solution to the Antimicrobial Resistance Challenge Using Silver Nanoparticles?* Graduate Student Research Day, Department of Civil and Environmental Engineering, University of Pittsburgh, Pittsburgh, PA, April 7, 2017. (Student Oral Presentation, Lisa Stabryla)
23. *Toward Rational Design of Carbon Nanomaterials: Decoupling the Role of Material Structure and Surface Chemistry on Electrochemical and Antimicrobial Activity.* Carbon Conference, State College, PA, July 10–15, 2016. (Student Poster, Yan Wang)
22. *Effect of Oxygen Functionalization on the Electrochemical and Antimicrobial Activity of Carbon Nanomaterials: Isolating the role of Surface Chemistry*. Presentation at the Carbon Conference, Penn State University, July 10–15, 2016.
21. *Evaluating a Potential Win-Win for Water Quality Management in Pennsylvania.* Poster at the Gordon Research Conference, Environmental Sciences: Water, Holderness, NH, June 26–July 1, 2016.
20. *Systems-Level Evaluation of Nano-Enabled Applications in the Agriculture Sector.* Green Chemistry and Engineering Conference, Portland, OR, June 14–16, 2016. (Student Poster, Joy Yin)
19. *Evaluating Trade-Offs to Maximize the Net Benefit of Emerging (nano)Technologies*. Presentation at the Green Chemistry and Engineering Conference, Portland, OR, June 14–16, 2016.
18. *Engineered Path Towards Innovative and Sustainable Nanotechnology Through the Lens of Manufacturing.* Presentation at the Sustainable Nanotechnology Organization Conference, Portland, OR, November 8–10, 2015.
17. *Sustainability by Design: Development of an Engineered Nanomaterials Selection Framework that Includes Property, Function and Hazard Criteria.* Poster at the Gordon Research Conference in Environmental Nanotechnology, Mount Snow, West Dover, VT, June 21–26, 2015.
16. *Development of a Pre-Screening Tool to Quantify Impact and Benefit Tradeoffs of Emerging Technologies.* Presentation at the Association of Environmental Engineering and Science Professors (AEESP) Conference, Yale University, New Haven, CT, June 13–16, 2015.
15. *Towards the Development of a Model that Informs Safer Carbon Nanotube Design: Using Zebrafish Mortality to Evaluate Carbon Nanotube Ecotoxicity Potential.* Presentation at the Sustainable Nanotechnology Organization Conference, Boston, MA, November 2–4, 2014.
14. *Life Cycle Impacts and Benefits of a Carbon Nanotube-Enabled Chemical Gas Sensor.* Presentation at the Sustainable Nanotechnology Organization Conference, Boston, MA, November 2–4, 2014.
13. *Towards Tailored Functional Design of Multi-Walled Carbon Nanotubes (MWNTs): Electrochemical and Antimicrobial Activity Enhancement via Oxidation and Selective Reduction*. Presentation at the American Chemical Society 248th National Meeting, San Francisco, CA, August 10–14, 2014.
12. *Impact of Oxygen Functional Groups on Multi-Walled Carbon Nanotube (MWNT) Reactivity: Potential Environmental Implications*. Poster at the Gordon Research Conference in Environmental Sciences: Water, Holderness, NH, June 22–27, 2014.
11. *Impact of Annealing Treatment on the Electrochemical Activity of Multi-Walled Carbon Nanotubes: Implications for Bacterial Cytotoxicity*. Poster at the Gordon Research Conference in Environmental Nanotechnology, Stowe, VT, June 2–7, 2013.
10. *Physicochemical Properties that Govern Multi-Walled Carbon Nanotube (MWNT) Bacterial Cytotoxicity*. Presentation at the Robert M. Langer Graduate Student Symposium, Yale University, December 7, 2012.

8. *A New Perspective on Carbon Nanotube Bacterial Cytotoxicity: MWNTs Exhibit Equivalent Loss of Cell Viability as SWNTs*. Poster at the Inaugural Sustainable Nanotechnology Organization Conference, Arlington, VA, November 4–6, 2012.
9. *Towards Green Design of Single-Walled Carbon Nanotubes: Decreased Cytotoxicity via Addition of Surface Functional Groups*. Presentation at the Robert M. Langer Graduate Student Symposium, Yale University, December 9, 2011.
7. *Towards Green Design of Single-Walled Carbon Nanotubes: Decreased Cytotoxicity via Addition of Surface Functional Groups*. Poster at the Environmental Protection Agency STAR Graduate Fellowship Conference, Washington, DC, September 19–20, 2011.
6. *Green Design of Single-Walled Carbon Nanotubes: Decreased Bacterial Cytotoxicity via Addition of Surface Functional Groups*. Poster at the Gordon Research Conference in Environmental Nanotechnology, Waterville Valley, NH, May 29–June 3, 2011.
5. *Green Design of Single-Walled Carbon Nanotubes: Decreased Bacterial Cytotoxicity via Addition of Surface Functional Groups*. Poster at the American Chemical Society 15th Annual Green Chemistry and Engineering Conference, Washington, DC, June 21–23, 2011.
4. *Green Design of Single-Walled Carbon Nanotubes: Decreased Bacterial Cytotoxicity via Addition of Surface Functional Groups*. Presentation at the Robert M. Langer Graduate Student Symposium, Yale University, December 10, 2010.
3. *Safer Design of Single Walled Carbon Nanotubes (SWNTs): A Comparative Bacterial Cytotoxicity Study of Pristine and Functionalized SWNTs*. Poster at the American Chemical Society 14th Annual Green Chemistry and Engineering Conference, Washington, DC, June 21–23, 2010.
2. *Safer Design of Single Walled Carbon Nanotubes (SWNTs): A Comparative Bacterial Cytotoxicity Study of Pristine and Functionalized SWNTs*. Poster at the 5th Annual Greener Nanoscience Conference, Portland, OR, June 16–18, 2010.
1. *Surface Enhanced Raman Spectroscopy Applied to Inorganic Compounds*. Poster at the American Chemical Society 233rd National Meeting, Chicago, March 25–29, 2007.

EXTERNALLY FUNDED RESEARCH PROPOSALS

Active

Pennsylvania Department of Transportation, *Carbon Nanotube Additives for Structural and Highway Concrete*. $219,092.32 (Total), $70,064.00 (Gilbertson Portion), 10/31/2018 – 10/30/2020, Co-PI, PI: Stephen Sachs (Pitt)

National Science Foundation, CBET, *SusChEM: Collaborative Research: Decoupling Structure and Surface Chemistry Impacts of Carbon Nanomaterials on Environmentally Relevant Electrochemical and Biological Activity.* $285,670.00 (Gilbertson portion), $414,065.00 (total), 9/1/2017 – 8/31/2020, PI, Co-PI: Perreault (ASU)

3M Non-Tenured Faculty Award. *Leveraging Nanomaterial Design for Next Generation Antimicrobials.* $45,000.00 ($15,000 per year for 3 years), 4/1//2017 – 3/31/2020, PI.

Gordon and Betty Moore Foundation, Moore Inventor Fellow Finalist, *A Novel Platform for Improved Agriculture Nutrient Use Efficiency.* $25,000.00, PI.

Graduate and Undergraduate Student Fellowships

National Defense Science and Engineering Graduate Fellowship (NDSEG), $198,000.00, 8/1/2017 – 7/31/2020; PhD student: Lisa Stabryla

Pending

National Science Foundation, *INFEWS, T2: Integrated systems approach to balancing technology design, performance, and adoption for atom-efficient agrochemical utilization in crop production.* $509,880.00 (Gilbertson Portion), 6/1/2019 – 5/31/2013, Co-PI, PI: Greg Lowry (CMU)

Past

ORAU Ralph E. Powe Junior Faculty Enhancement Award, *Simultaneous In Situ Characterization of Multiple Carbon Nanomaterial Properties Using Liquid Cell TEM-STEM at ORNL.* $10,000.00, 6/1/2017 – 5/31/2018, PI.

Mindlin Foundation, *Teaching Sustainable Engineering Through Design Thinking.* $10,000.00, 1 year, 5/1/2017 – 4/30/2018, PI

USGS 104B Water Resources Research Projects, *Evaluating a Potential Win-Win for Water Quality Management in Pennsylvania: Systems-Level Quantitative Analysis of Abandoned Mine Drainage and Produced Water Co-Treatment*. $20,000.00, 3/1/2016-12/31/2016, PI, Co-PI: Radisav Vidic (Pitt)

USDA, Conference Grant, *Environmental Nanotechnology Gordon Research Conference and Seminar: A Platform for Cutting Edge Research in Nanotechnology Applications and Implications*. $49,400.00, 3/17/17 – 7/23/17, Co-PI, PI: Sharon Walker (UCR)

US EPA, Conference Grant, *Environmental Nanotechnology Gordon Research Conference and Seminar: A Platform for Cutting Edge Research in Nanotechnology Applications and Implications*. $25,000.00, 3/17/17 – 7/23/17, Co-PI, PI: Sharon Walker (UCR)

NSF, Conference Grant, *Environmental Nanotechnology Gordon Research Conference and Seminar: A Platform for Cutting Edge Research in Nanotechnology Applications and Implications*. $49,050.00, 3/17/17 – 7/23/17, Co-PI, PI: Sharon Walker (UCR)

Graduate and Undergraduate Student Fellowships

Mindlin Foundation Undergraduate Mentored Research Fellowship, *Informing Design of Next Generation Materials for Civil Engineering.* $5,000.00, 5/1/2018 – 8/31/2018; Undergraduate student: Nathanial Buettner

INTERNALLY FUNDED RESEARCH PROPOSALS

Active

University of Pittsburgh Central Research Development Fund, *A Coupled Modeling-Experimental Approach to Identify Hazardous Degradation Product Formation from Carbon Nanomaterial-Enabled Advanced Water Treatment Membranes.* $17,940.00, 8/1/2018 – 6/30/2020, PI, Co-PI: Carla Ng (Pitt).

University of Pittsburgh Civil and Environmental Engineering Department Seed Grant, *Enhancing Predictive Models for Degradation Product Formation Using Network Analysis and Experimental Validation.* $70,000.00, 8/1/2018 – 7/31/2019, Co-PI, PI: Carla Ng (Pitt)

University of Pittsburgh Central Research Development Fund, *Informing Sustainable Design of Carbon Nanomaterials through Heteroatom Functionalization.* $16,000.00, 8/1/2017 – 7/31/2018, PI.

Graduate Student Fellowships

Pittsburgh Paint and Glass (PPG) Graduate Research Fellowship, *The Role of Nitrogen in Rational Design of Sustainable Antimicrobial Carbon Nanomaterials*. $20,000.00 one year; PhD student: Nathalia Aquino de Carvalho

Pending

Past

University of Pittsburgh Innovation in Education Awards, *Teaching Sustainable Engineering Through Design Thinking.* $15,000.00, 5/1/2017 – 4/30/2018, PI

CONTRIBUTIONS TO TEACHING

Courses Taught at the University of Pittsburgh 2015 – Present

The curriculum of all courses listed below has been developed with a particular focus on integrating active learning components to enhance student engagement with the course content. Opportunities for students to advance their written and oral communications skills is also emphasized. In addition, CEE1618 integrates the Design Thinking process in an effort to enhance students' innovative and creative problem-solving mindset in tackling engineering challenges and takes advantage of university MakerSpaces. Long-term data collection is ongoing in collaboration with the EERC to evaluate the effectiveness of the course and pedagogical tools in enhancing student creativity and overall knowledge gains in sustainable engineering.

Course	Type/Level	Term Taught	Enrollment	OMET Score (/5)
CEE2501: Environmental Engineering Chemistry	Lecture/Grad	Fall 2015	18	4.33
CEE2501: Environmental Engineering Chemistry	Lecture/Grad	Fall 2016	13	4.64
CEE1618: Design for the Environment	Lecture/Undergrad	Fall 2016	26	4.13
CEE2501: Environmental Engineering Chemistry	Lecture/Grad	Fall 2017	11	4.50
CEE1618: Design for the Environment	Lecture/Undergrad	Fall 2017	28	4.50
CEE1504: Chemistry for Environmental Engineers*	Lecture/Undergrad	Summer 2018	3	NA
CEE2501: Environmental Engineering Chemistry	Lecture/Grad	Fall 2018	10	4.4
CEE1618: Design for the Environment	Lecture/Undergrad	Fall 2018	26	4.81

*This is a new course being developed for the undergraduate environmental engineering program and will be taught in the spring term hereafter.

Stanford d-School Teaching and Learning Studio July 2017

National Effective Teaching Institute (NETI-1B) May 2017

Guest Lecturer, University of Pittsburgh

Environmental Engineering Processes, CEE 1513, 1/14/16 (undergraduate, 55 students)
Sustainable Computing, ECE 2195, 1/25/16 (graduate, 15 students)

Teaching Fellow, School of Engineering and Applied Science, Yale University 2011, 2012

Green Engineering and Sustainable Design (mixed grad/undergrad, 30-40 students)
Instructors: Dr. Julie B. Zimmerman, Dr. Mathew J. Eckelman

Teaching Fellow, School of Forestry & Environmental Science, Yale University 2010
Greening Business Operations (graduate, 30 students)
Instructors: Dr. Thomas E. Graedel, Dr. Marian Chertow, Dr. Julie B. Zimmerman

High School Chemistry & AP Chemistry Teacher, Saint James School, MD 2009

Advancement Via Individual Determination (AVID) Mentor 2009
Humble Independent School District, Kingwood, TX

Teaching Fellow, George Watson's College, Edinburgh, Scotland 2007 – 2008

Chemistry Teaching Intern, Northfield Mount Hermon School 2006

GRADUATE STUDENTS

Ph.D. Students, Department of Civil and Environmental Engineering

Ms. Yan Wang — Anticipated graduation 2019
Source of Support: NSF CBET grant and USGS 104B

Ms. Nathália Aquino de Carvalho — Anticipated graduation 2019
Source of Support: PPG Graduate Research Fellowship and Department

Ms. Lisa Stabryla — Anticipated graduation 2019
Source of Support: NDSEG Fellowship and Education Awards

Mr. Trevor Sleight (Co-advised, Dr. Carla Ng) — Anticipated graduation 2021
Source of Support: US Air Force

MS Students, Department of Civil and Environmental Engineering

Mr. Tianyu Zhang — Anticipated graduation 2019
Source of Support: Self-funded and ORAU Powe Jr. Faculty Award

OTHER ADVISEES

Postdoctoral Associate, Department of Civil and Environmental Engineering

Dr. Traci Clymer, PhD in Chemistry (Co-advised, Dr. Carla Ng) 2019
Source of Support: Departmental New Collaborative Initiatives Grant

Dr. Ashley Smith, PhD in Chemistry 2018 (7 months)
Source of Support: Faculty Start-Up

Masters Students, Department of Civil and Environmental Engineering

Mr. Joshua Urso 2016 – 2018
Source of Support: Faculty Start-Up and 3M Non-Tenured faculty award

Sishan Li, *research for credit* Spring 2017

Zhenqi Zhang, *research for credit* Spring 2017

Jiaoyang Yin, self-funded Fall 2015 – Spring 2016

Undergraduate Students

Department of Civil and Environmental Engineering

Ananya Mukherjee Summer 2019

Nathanial Buettner 2017 –2018

Rebecca Linick Fall 2017 – Present

Department of Chemical and Petroleum Engineering

Alexis Yates (ChemE REU program), co-advisor	Summer 2018
Sean Vinik (ChemE REU program)	Summer 2017
Jasmine Toney (MCSI summer research fellow)	Summer 2016

Department of Mechanical Engineering and Materials Science

Cole Daurizio (MCSI summer research fellow)	Summer 2017
Hannah Laskey	Spring 2016

High School Students

Liam Hainsworth, Pittsburgh Science and Technology Magnet School	Fall 2017 – Present

HONORS AND AWARDS

Gordon and Betty Foundation, Moore Inventor Fellow Top 10 Finalist	2017
Ralph E. Powe Junior Faculty Enhancement Award	2017
3M Non-Tenured Faculty Award	2017
Excellence in Review Award, Environmental Science & Technology	2016
Top 10 Reviewer Award, Environmental Science: Nano	2016
Yale-Jefferson Public Service Award, Yale University	2014
Harding Bliss Prize for Excellence in Engineering and Applied Science, Yale University	2014
National Science Foundation (NSF) Graduate Research Fellow	2012 – 2014
U.S. Environmental Protection Agency (EPA) STAR Fellow	2010 – 2012
Graduate School Community Service Award Finalist, Yale University	2011
ACS Green Chemistry Institute Ciba Travel Award	2010
National Science Foundation Scholar Conference Travel Award	2010
Emerson Electric Company Fellowship, Yale University	2009 – 2011
George Watson's College Teaching Fellowship, Hamilton College	2007
Undergraduate Student Award, NY Section of the Society for Applied Spectroscopy	2007
Levitt Scholar, Hamilton College	2007
Phi Beta Kappa, Hamilton College	2007
Dean's List Honors, Hamilton College	2003 – 2007

PROFESSIONAL SERVICE ACTIVITIES

Internal

Member of the CEE Faculty Search Committee, Univ. Pittsburgh	2018 – Present
Faculty Advisor, Society of Women Engineers, Univ. Pittsburgh	2018 – Present
Member of the CEE Faculty Search Committee, Univ. Pittsburgh	2017 – 2018
Faculty Advisor, The Aquaponics Project, Univ. Pittsburgh	2017 – Present
Department Website Committee Lead, Univ. Pittsburgh	2016 – Present
Department Graduate Seminar Organizer	2017 – 2018
4th Annual Women in STEM Conference, Univ. Pittsburgh	2/10/2017

Panelist, *Work-Life Balance Panel Discussion*

Speaker**,** *Why You Should Consider Environmental Engineering*

Department point person for new ENG 2900 graduate fellowships workshop course Fall 2016

PhD Committee Member, University of Pittsburgh 2015 – Present
12 (5 female) in the Department of Civil and Environmental Engineering
2 (both female) in the Department of Chemistry

MS Committee Member, University of Pittsburgh 2015 – Present
1 (1 female) in the Department of Civil and Environmental Engineering

External

Journal Reviewer for Environmental Science and Technology, ACS Nano, Carbon, Nanoscale, Environmental Science: Nano, Journal of American Chemical Society, ACS Sustainable Chemistry and Engineering, ACS Applied Materials and Interfaces, Environmental Science: Water Research and Technology, Langmuir, Chemical Research in Toxicology, Environmental Pollution, Chemical Engineering Journal, Advances in Colloid and Interface Science, Construction and Building Materials, Environmental Research, Materials Chemistry and Physics, Water Research, Scientific Reports, Journal of Materials Chemistry B, NanoImpact, Journal of Advanced Research.

NSF Panel Reviewer for CBET: Environmental Engineering Program, Environmental Sustainability Program, and Biological and Environmental Interactions of Nanoscale Materials Programs, and CMMI: Nanomanufacturing Program

Session Co-Chair, *Advances in Carbon Nanomaterial Design and Applications for Environmental Sustainability*, Division of Environmental Chemistry, 256th ACS National Meeting and Exposition, August 19-23, 2018

Member of the Water Works Operators' Association of Pennsylvania (WWOAP) Scholarship Committee, 2018

Session Moderator, *Advancing Community Health Through Technology Innovation: Physical-Chemical Session,* Association of Environmental Engineering & Science Professors (AEESP) Research and Education Conference, June 20-22, 2017.

Chair, Environmental Nanotechnology Gordon Research Seminar (GRS), June 17-18, 2017

Session Chair, *Sustainable Materials*, Green Chemistry and Engineering Conference, June 14-16, 2016

NSF-AEESP Grand Challenge Workshop Participant on redefining environmental engineering and science, Rice University, March 31 – April 1, 2016

Session Chair, *Industrial Ecology and Manufacturing*, Sustainable Nanotechnology Organization (SNO) Conference, November 8-10, 2015

NSF Workshop Participant, the Role of Nanotechnology in Achieving Sustainability at the Food-Energy-Water (FEW) Nexus, Carnegie Mellon University, October 19-20, 2015

Session Chair, *LCA at the Technology Nexus: Evaluating Tradeoffs* and *LCA at the Energy Nexus*, Association of Environmental Engineering & Science Professors (AEESP) Research and Education Conference, June 13-16, 2015.

Registration & Communications Manager, Association of Environmental Engineering & Science Professors (AEESP) Research and Education Conference Committee, Fall 2014 – Summer 2015

Chair, Professional Development Panel at the Environmental Nanotechnology Gordon Research Seminar (GRS), June 20-21, 2015.

Women in Science at Yale Mentor, Two PhD students, Yale University, 2014 – 2015

Research Mentor, Chemical and Environmental Engineering, Yale University, 2014 – 2015

2 PhD students, 1 female undergraduate, 1 female visiting researcher, 2 high school students (1 female)

Advanced Graduate Leadership Program K-12 Outreach Fellow, School of Engineering & Applied Science, 2011 – 2014

Pathways to Engineering Day Organizer, Yale University, 2011-2012

Yale Summer SCHOLAR Instructor, Yale University, summer 2012

Recruitment Committee Member, Environmental Engineering, Yale University, 2010 & 2012

Planning Committee Member & Panel Moderator, U.S. EPA STAR Conference, September 2011

Science & Engineering Enrichment Program Volunteer, Yale University, 2010 – 2011

Langer Symposium Committee Member, Yale University, 2009 & 2013

President, American Chemical Society Student Chapter, Hamilton College, 2007

CONRIBUTIONS TO DIVERSITY

Served on the department faculty search committee for two positions in sustainable and environmental engineering; 67% of the nine candidates interviewed on campus were *female* and 44% were an *underrepresented minority*.

Serve as primary advisor to *three female* PhD students.

Mentored a *female minority undergraduate* rising senior through the MCSI summer research fellowship.

Mentored *one female* master's student and three additional *female undergraduate* students.

Mentored and *published a paper* in Environmental Science & Technology (2016 publication) with a *female minority undergraduate student* who worked with me 2014-2015.

CONSULTING ACTIVITIES

STEM Education Consultant for Finn Partners, consulted on content for ExxonMobil's Be An Engineer campaign (May 2015 – February 2016)